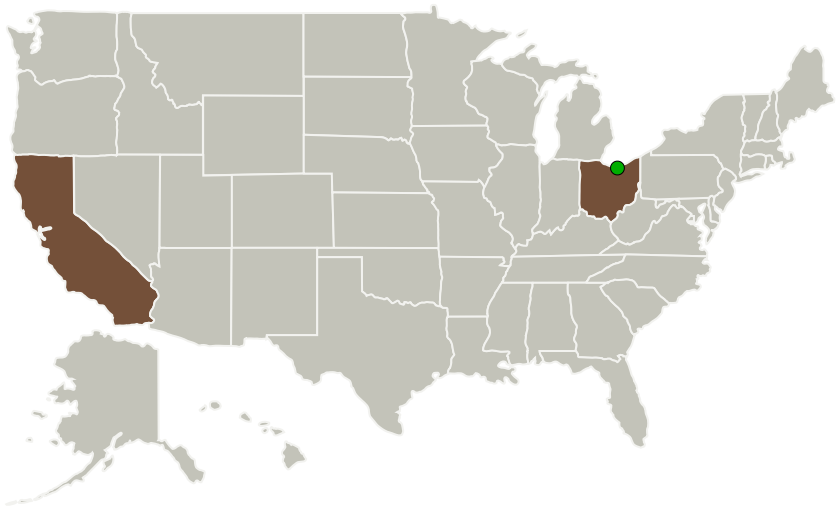
High-Performance Elastically Self-Deployed Roll-Out Solar Array (ROSA), Phase II

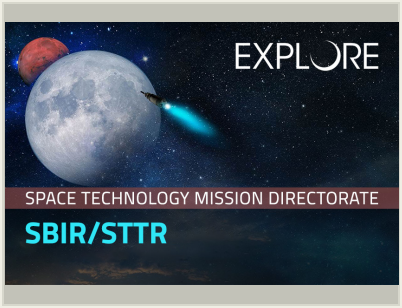
Completed Technology Project (2010 - 2013)

Project Introduction

Deployable Space Systems (DSS) has developed an ultra-lightweight elastically self-deployable roll-out solar array (ROSA) structural platform that when combined with ultra-thin 33% IMM PV or 29.5% standard ZTJ PV solar-cell flexible blanket technologies can produce a near-term and low-risk solar array system that provides revolutionary performance in terms of high specific power (>500 W/kg BOL with IMM & >225 W/kg with ZTJ), lightweight, high deployed stiffness, high deployed strength, compact stowage volume (>50 kW/m3 BOL), reliability, affordability, and rapid commercial readiness. ROSA's predicted performance metrics are incredible improvements over current state-of-the-art, and in many cases are mission-enabling for future applications. The ROSA technology innovation is applicable to practically all NASA and non-NASA missions as a direct replacement for current solar array technologies. The proposed Phase 2 program has been uniquely structured to methodically develop a feasible scaled-up ROSA solar array system specifically configured for NASA's Outer-Planets mission applications, collaboratively with all the technology stakeholders, and increase technology readiness to TRL 5/6. The successful completion of the proposed program will rapidly ready the mission-enabling ROSA solar array technology for commercial infusion into future programs.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Deployable Space Systems, Inc(DSS)	Lead Organization	Industry	Goleta, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Project Transitions

February 2010: Project Start

February 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139080)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Deployable Space Systems, Inc (DSS)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

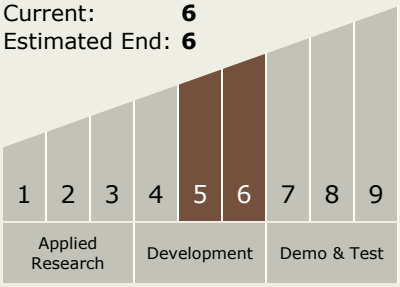
Carlos Torrez

Principal Investigator:

Brian R Spence

Technology Maturity (TRL)

Start: **5**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System